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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/118,080	07/17/1998	WARREN M. FARNWORTH	M4065.067/P0	8629

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EXAMINER

CHAMBLISS, ALONZO

ART UNIT PAPER NUMBER

2827

DATE MAILED: 01/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/118,080

Applicant(s)

FARNWORTH, WARREN M.

Examiner

Alonzo Chambliss

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-18 and 31-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-18 and 31-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-7, 9-18, and 31-33 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1- are rejected under 35 U.S.C. 103(a) as being unpatentable over Heo et al. (U.S. 5,858,815) in view of Neugebauer et al. (U.S. 4,769,744).

With respect to Claims 1, 10, 13, and 31, Heo discloses a chip 11, a single dielectric layer 21 (i.e. a non-conductive film), an electrically conductive lead 26 on the dielectric layer 21, and a low temperature curing adhesive 30 (i.e. epoxy adhesive) located between the chip 11 and the dielectric layer 21 (see col. 5 lines 18-20; Fig. 4B). Furthermore, the word "single dielectric layer" does not exclude the device taught by Heo from having more than one dielectric layer. Integrated circuits 11 are formed in the semiconductor material. The tape 26 has openings 23 aligned with the integrated circuits 11, wherein bond wires 40 extend through the openings that are electrically connected to the integrated circuits. It is well known in the semiconductor industry that an epoxy adhesive layer (i.e. sheet) can be substitute for an anisotropic conductive

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adhesive (i.e. sheet) as evident from Akagawa (U.S. 6,121,688) col. 11 line 46-48). Heo fails to disclose an adhesive material that cures to about ninety percent of its maximum strength within two to three hours or twenty four to thirty six hours without exceeding one hundred fifty degrees Fahrenheit. However, Neugebauer discloses an adhesive material (i.e. epoxy adhesive) that cures at room temperature 24 degrees Celsius (i.e. 75.2 degrees Fahrenheit) for 24 hours and cures at 50 degrees Celsius (i.e. 122 degrees Fahrenheit) for 1 hour. Since the adhesive material has been cured at room temperature then one skill in the art would readily recognized that at least ninety percent of the maximum strength of the material is reached at that point. Absent disclosure of criticality of the particular claimed time range giving rise to unexpected results, and since the general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. In re Allen, 220 F.2d 454, 456, 105USPQ 233,235 (CCPA 1955).

With respect to Claims 2 and 14, Heo discloses a dielectric layer 21 that is made of polyimide (see col. 5 lines 11 and 12).

With respect to Claims 3 and 15, it is well known in the semiconductor industry that benzocyclobutene and polyimide are low K dielectric materials and can be substitute for one another as evident from Chang et al. U.S. 5,559,055 col. 4 lines 55-67, col. 6 lines 66 and 67, and col. 7 lines 1-3).

With respect to Claim 4, Heo discloses bond wires 40 connect the semiconductor chip 11 to the electrically conductive leads 26 (see Fig. 4B).

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With respect to Claims 5, 6, 17, 18, and 32, Heo discloses a resin material 50 that encapsulates the bond wires 40 (see col. 6 lines 60-64; Fig. 6B). The slot-shaped opening 23 is defined in the dielectric layer 21, wherein the bond wires 40 and the resin material 50 are located in the opening 23.

With respect to Claims 7, 12, and 33, Heo discloses a ball grid array 60 that is on the leads 26 (see Fig. 4B).

With respect to Claims 9 and 16, Heo discloses a tape 21 includes a dielectric layer (i.e. polyimide) and electrically conductive leads 26, wherein the leads 26 are on the dielectric layer.

With respect to Claim 11, Heo discloses a glob top encapsulant material 50 that is in the opening 23 (see Fig. 6B).

Conclusion


4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. It is cited primarily to show the product of the instant invention.

Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956.

AC

AC/January 19, 2002


DAVID L. TALBOTT
PRIMARY EXAMINER
ART UNIT 355